Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A method for operating an access point in a MIMO wireless communication system, said method comprising:

inserting a first preamble into a first packet and a second preamble into a second packet, at least one of said first and second preambles comprising symbols for use in synchronization and both of said first and second preambles comprising symbols for use in channel estimation, wherein said first and second preambles are each configured with a quiet period to allow transmission of one of said symbols in said other packet;

sending a said first packet to a first subscriber unit via a first spatial subchannel; and

sending a said second packet to a second subscriber unit via a second spatial subchannel, said first spatial subchannel and said second spatial subchannel occupying the same bandwidth;

wherein said second packet has greater data length than said first packet; and

wherein sending said first packet and sending said second packet begin and end substantially simultaneously.

Claim 2 (original): The method of claim 1 further comprising:

receiving acknowledgements of said first packet and said second packet after completion of transmission of said first packet and said second packet.

Claim 3 (original): The method of claim 2 wherein said first packet is padded so that it will end simultaneously with said second packet.

Claim 4 (original): A method for operating an access point in a MIMO wireless communication system, said method comprising:

for a plurality of subscriber units of said access point, identifying ranges of said subscriber units from said access point;

assigning a first group of said subscriber units to transmit simultaneously during a first upstream transmission slot; and

assigning a second group of said subscriber units to transmit simultaneously during a second upstream transmission slot; and

wherein subscriber units of said first group are chosen to have substantially similar ranges to one another and subscriber units of said second group are chosen to have substantially similar ranges to one another.

Claim 5 (original): The method of claim 4 further comprising:

transmitting a beacon message identifying a time period for contention-free transmission between said access point and said subscriber units of said first and second groups.

Claim 6 (original): The method of claim 5 further comprising transmitting said beacon message in a contention free period as defined by IEEE 802.11.

Claim 7 (currently amended): A method for operating an access point in a MIMO communication system, said method comprising:

receiving a first packet from a first subscriber unit within a first spatial subchannel wherein a second packet has commenced transmission substantially simultaneously with said first packet, said second packet being transmitted within a second spatial subchannel sharing bandwidth with said first spatial subchannel, wherein said second packet is longer than said first packet; and

transmitting an acknowledgement of said first packet to said first subscriber unit only after completing reception of said second packet;

wherein said first packet comprises a first preamble and said second packet comprises a second preamble, at least one of said first and second preambles comprising symbols for use in synchronization and both of said first and second preambles comprising symbols for use in channel estimation, wherein said first and second preambles are each configured with a quiet period to allow transmission of one of said symbols in said other packet.

Claim 8 (original): The method of claim 7 wherein said acknowledgement is formatted in accordance with IEEE 802.11.

Claim 9 (currently amended): A method for operating a subscriber unit in a MIMO communication system, said method comprising:

receiving a message comprising subscriber channel assignment information;

receiving a first packet from an access point in a first spatial subchannel;

receiving a second packet from said access point simultaneously in a second spatial subchannel that shares bandwidth with said first spatial subchannel; and

decoding only said first packet and not said second packet.

Claim 10 (original): The method of claim 9 wherein said first packet is formatted in accordance with IEEE 802.11.

Claim 11 (withdrawn): A method of operating a subscriber unit in a MIMO communication system, said method comprising:

transmitting an OFDM signal via a first spatial subchannel;

transmitting first channel training information on said OFDM signal in a first channel training period; and

during a second channel training period, quieting said OFDM signal to allow transmission of second channel training information by another subscriber unit.

Claim 12 (withdrawn): The method of claim 11 wherein said first channel training information is specified by the IEEE 802.11a standard.

Claim 13 (withdrawn): The method of claim 11 further comprising:

transmitting start of packet information on said OFDM signal prior to said first channel training period.

Claim 14 (withdrawn): The method of claim 13 further comprising:

quieting said OFDM signal to allow transmission of start of packet information by said another subscriber unit.

Claim 15 (withdrawn): The method of claim 11 further comprising:

quieting said OFDM signal to allow transmission of start of packet information by said another subscriber unit.

Claim 16 (withdrawn): In a wireless communication network, a method for operating an SDMA-capable subscriber unit, said method comprising:

during a contention period, requesting an access point for permission to switch between an SDMA mode and a non-SDMA mode; and

upon receiving permission, switching between said SDMA mode and said non-SDMA mode.

Claim 17 (withdrawn): The method of claim 16 wherein requesting comprises transmitting an 802.11 reassociation request or 802.11 association request having a supplemental SDMA status information element.

Claim 18 (withdrawn): The method of claim 16 further comprising:

during a non-contention period:

communicating data with said access point in a SDMA subperiod if said subscriber unit is in SDMA mode; and

communicating data with said access point in a non-SDMA subperiod if said subscriber unit is in non-SDMA mode.

Claim 19 (withdrawn): In a wireless communication system having subscriber units operating in a SDMA mode and subscriber units operating in a non-SDMA mode, a method for operating an access point, said method comprising:

maintaining a list of subscriber units operating in an SDMA mode and subscriber units operating in a non-SDMA mode; and

within a designated contention free period, polling SDMA-mode subscriber units and non-SDMA-mode subscriber units for transmissions in corresponding non-overlapping subperiods of said contention free period.

Claim 20 (withdrawn): The method of claim 19 further comprising:

during a contention period, receiving a request from a selected subscriber unit desiring to switch between SDMA mode and non-SDMA node.

Claim 21 (withdrawn): The method of claim 20 wherein said request comprises an 802.11 reassociation request or association request having a supplemental SDMA status information element.

Claim 22 (currently amended): Apparatus for operating an access point in a MIMO wireless communication system, said apparatus comprising:

an insertion block configured to insert a first preamble into a first packet and a second preamble into a second packet, at least one of said first and second preambles comprising symbols for use in synchronization and both of said first and second preambles comprising symbols for use in channel estimation, wherein said first and second preambles are each configured with a quiet period to allow transmission of one of said symbols in said other packet;

a first transmitter block that sends a said first packet to a first subscriber unit via a first spatial subchannel; and

a second transmitter block that sends a said second packet to a second subscriber unit via a second spatial subchannel, said first spatial subchannel and said second spatial subchannel occupying the same bandwidth;

wherein said second packet has greater data length than said first packet; and

wherein sending said first packet and sending said second packet begin and end substantially simultaneously.

Claim 23 (original): The apparatus of claim 22 further comprising:

a receiver system that receives acknowledgements of said first packet and said second packet after completion of transmission of said first packet and said second packet.

Claim 24 (original): The apparatus of claim 22 wherein said first packet is padded so that it will end simultaneously with said second packet.

Claim 25 (original): Apparatus for operating an access point in a MIMO wireless communication system, said apparatus comprising:

a MAC layer processor that, for a plurality of subscriber units of said access point, identifies ranges of said subscriber units from said access point, assigns a first group of said subscriber units to transmit simultaneously during a first upstream transmission slot, and assigns a second group of said subscriber units to transmit simultaneously during a second upstream transmission slot; and

wherein subscriber units of said first group are chosen to have substantially similar ranges to one another and subscriber units of said second group are chosen to have substantially similar ranges to one another.

Claim 26 (original): The apparatus of claim 25 wherein said MAC layer processor further transmits a beacon message identifying a time period for contention-

free transmission between said access point and said subscriber units of said first and second groups.

Claim 27 (original): The apparatus of claim 26 wherein said beacon message is transmitted in a contention free period as defined by IEEE 802.11.

Claim 28 (currently amended): Apparatus for operating an access point in a MIMO communication system, said apparatus comprising:

a receiver system that receives a first packet from a first subscriber unit within a first spatial subchannel wherein a second packet has commenced transmission substantially simultaneously with said first packet, said second packet being transmitted within a second spatial subchannel sharing bandwidth with said first spatial subchannel, wherein said second packet is longer than said first packet; and

a transmitter system that transmits an acknowledgement of said first packet to said first subscriber unit only after completing reception of said second packet;

wherein said first packet comprises a first preamble and said second packet comprises a second preamble, at least one of said first and second preambles comprising symbols for use in synchronization and both of said first and second preambles comprising symbols for use in channel estimation, wherein said first and second preambles are each configured with a quiet period to allow transmission of one of said symbols in said other packet.

Claim 29 (original): The apparatus of claim 28 wherein said acknowledgement is formatted in accordance with IEEE 802.11.

Claim 30 (currently amended): Apparatus for operating a subscriber unit in a MIMO communication system, said apparatus comprising:

a receiver block that receives a message comprising subscriber channel assignment information and receives a first packet from an access point in a first spatial

subchannel and ~~receives~~ a second packet from said access point simultaneously in a second spatial subchannel that shares bandwidth with said first spatial subchannel; and

a decoder block that decodes only said first packet and not said second packet.

Claim 31 (original): The apparatus of claim 30 wherein said first packet is formatted in accordance with IEEE 802.11.

Claim 32 (withdrawn): Apparatus for operating a subscriber unit in a MIMO communication system, said apparatus comprising:

a transmitter system that transmits an OFDM signal via a first spatial subchannel;

a channel training information insertion block that inserts first channel training information on said OFDM signal in a first channel training period; and

wherein said transmitter system, during a second channel training period, quiets said OFDM signal to allow transmission of second channel training information by another subscriber unit.

Claim 33 (withdrawn): The apparatus of claim 32 wherein said first channel training information is specified by the IEEE 802.11a standard.

Claim 34 (withdrawn): The apparatus of claim 32 wherein said transmitter block transmits start of packet information on said OFDM signal prior to said first channel training period.

Claim 35 (withdrawn): The apparatus of claim 34 wherein said transmitter block quiets said OFDM signal to allow transmission of start of packet information by said another subscriber unit.

Claim 36 (withdrawn): In a wireless communication network, apparatus for operating an SDMA-capable subscriber unit, said apparatus comprising:

a MAC layer processor that, during a contention period, requests an access point for permission to switch between an SDMA mode and a non-SDMA mode and upon receiving permission, switches between said SDMA mode and said non-SDMA mode.

Claim 37 (withdrawn): The apparatus of claim 36 wherein said MAC layer processor requests by transmitting an 802.11 reassociation request or 802.11 association request having a supplemental SDMA status information element.

Claim 38 (withdrawn): The apparatus of claim 36 wherein said MAC layer processor, during a non-contention period, communicates data with said access point in a SDMA subperiod if said subscriber unit is in SDMA mode and communicates data with said access point in a non-SDMA subperiod if said subscriber unit is in non-SDMA mode.

Claim 39 (withdrawn): In a wireless communication system having subscriber units operating in a SDMA mode and subscriber units operating in a non-SDMA mode, apparatus for operating an access point, said apparatus comprising:

an SDMA-capable physical layer transceiver that maintains a list of subscriber units operating in an SDMA mode and subscriber units operating in a non-SDMA mode; and within a designated contention free period; and

a MAC layer processor that polls SDMA-mode subscriber units and non-SDMA-mode subscriber units for transmissions in corresponding non-overlapping subperiods of said contention free period.

Claim 40 (withdrawn): The apparatus of claim 39 wherein said MAC layer processor, during a contention period, receives a request from a selected subscriber unit desiring to switch between SDMA mode and non-SDMA node.

Claim 41 (withdrawn): The apparatus of claim 40 wherein said request comprises an 802.11 reassociation request or 802.11 association request having a supplemental SDMA status information element.